



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/559,891

12/06/2005

Adrian Robert Leigh Travis

65,396-0001

2859

26127 7590 10/22/2008  
DYKEMA GOSSETT PLLC  
39577 WOODWARD AVENUE  
SUITE 300  
BLOOMFIELD HILLS, MI 48304-5086

EXAMINER

CARTER III, ROBERT E

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

10/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,891	<b>Applicant(s)</b> TRAVIS, ADRIAN ROBERT LEIGH	
	<b>Examiner</b> ROBERT E. CARTER III	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06/27/2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

The amendment submitted on 6/27/2008 has been entered and considered by the examiner.

### ***Drawings***

The drawings are objected to because Fig. 4 shows the top row of LEDs illuminated in the side view but the bottom row of LEDs illuminated in the front view. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 5, 7-13, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Irwin (US Patent # 4,978,952).

As for claim 1, Irwin teaches:

*An illuminator system (Fig. 2) for a flat-panel display (Fig. 2, #30), comprising:  
a tapered waveguide (Fig. 2, #20) co-extensive with the display,  
a plurality of light sources (Figs. 2, 6, #25) each arranged to inject light at a different angle into an edge of the waveguide (Fig. 3, LEDs 25 are clearly injecting light at different angles), wherein light injected from each of the light sources emerges at different positions on a face of the waveguide based on the injection angle corresponding to each light source (Fig. 3, the light from the bottom LED clearly*

emerges at the top of the waveguide, and the light from the top LED clearly emerges at the bottom of the waveguide), *and*

*means (Fig. 6, #51, 52, 53, 54) for scanning the emerging light associated with a light source onto a portion of the display (Col. 5, lines 16-32), wherein a position of the portion of the display corresponds to the position on the face of the waveguide at which the light emerges (Fig. 2, the waveguide clearly projects the light from a particular LED onto a portion of the display corresponding to the position on the face of the waveguide at which the light emerges).*

As for claim 2, Irwin teaches:

*An illuminator system according to claim 1, in which each light source comprises one or more addressable rows of elements (Fig. 6, R, G, B diode rows, Col. 5, lines 3-8), and the scanning means includes a circuit (Fig. 6, #51, 52, 53, 54) for addressing these rows of elements.*

As for claim 5, Irwin teaches:

*An illuminator system according to claim 2, in which the one or more rows of elements comprises a plurality of LEDs (Col. 5, lines 3-8).*

As for claim 7, Irwin teaches:

*A display comprising an illuminator system according to claim 1, used as a backlight, and a flat-panel modulator over the-waveguide (Fig. 2, Col. 6, lines 57-63).*

As for claim 8, Irwin teaches:

*A display according to claim 7, in which the modulator is a liquid-crystal display (Col. 6, lines 64-66).*

As for claim 9, Irwin teaches:

*A display according to claim 2, in which a scanning addressing circuit (Fig. 6, #51, 57, 58) is synchronized with the row addressing circuit (Col. 8, lines 6-10).*

As for claim 10, Irwin teaches:

*An illuminator system according to claim 1, wherein the waveguide is geometrically tapered (the waveguide of Figs. 2 and 3 is clearly geometrically tapered).*

As for claim 11, Irwin teaches:

*An illuminator system according to claim 1, wherein the waveguide is optically tapered (the waveguide of Figs. 2 and 3 is clearly optically tapered).*

As for claim 12, Irwin teaches:

*A method for illuminating a flat-panel display (Fig. 2, #30), comprising:*

*a) injecting light from a light source of a plurality of light (Figs. 2, 6, #25) sources at an injection angle into an edge of a tapered waveguide (Fig. 2, #20) that is co-extensive with the display (Fig. 3, LEDs 25 are clearly injecting light at different angles), wherein the injected light emerges from a position on a face of the waveguide based on the injection angle of the light source (Fig. 3, the light from the bottom LED clearly emerges at the top of the waveguide, and the light from the top LED clearly emerges at the bottom of the waveguide);*

*b) scanning (Fig. 6, #51, 52, 53, 54) light emerging from the position on the face of the*

*waveguide onto a portion of the display (Col. 5, lines 16-32), wherein a position of the portion of the display corresponds to the position on the face of the waveguide (Fig. 2, the waveguide clearly projects the light from a particular LED onto a portion of the display corresponding to the position on the face of the waveguide at which the light emerges);*

*c) switching off the light source; and d) sequentially repeating steps a) - c) for one or more other light sources of the plurality of light sources, wherein each of the plurality of light sources corresponds to a different injection angle, so that different portions of the display are illuminated in turn as each light source injects light into the edge of the waveguide (Col. 5, lines 16-32).*

As for claim 13, Irwin teaches:

*A method according to claim 12, wherein each light source comprises one or more addressable rows of elements (Fig. 6, R, G, B diode rows, Col. 5, lines 3-8).*

As for claim 16, Irwin teaches:

*A method according to claim 13, wherein the one or more rows of elements comprises a plurality of LEDs (Col. 5, lines 3-8).*

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2629

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin in view of Wang (US Patent # 6,704,017).

As for claim 3, Irwin teaches all the limitations of claim 2.

Irwin does not teach a cylindrical mirror.

In the same field of endeavor (i.e. backlights using light guides) Wang teaches:

*An illuminator system (Fig. 2, #20), in which light from the one or more rows of elements (Fig. 2, #23) is collimated into the edge of the waveguide (Fig. 2, #21) by a cylindrical mirror (Fig. 2, #24), (Col. 3, lines 9-14).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the cylindrical mirror of Wang, to reflect the light from the light elements into the light guide (Wang, Col. 3, lines 11-14).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin in view of Wang (US Patent # 6,704,017).

As for claim 14, Irwin teaches all the limitations of claim 13.



Irwin does not teach a cylindrical mirror.

In the same field of endeavor (i.e. backlights using light guides) Wang teaches: *wherein light from the one or more rows of elements (Fig. 2, #23) is collimated into the edge of the waveguide (Fig. 2, #21) by a cylindrical mirror (Fig. 2, #24), (Col. 3, lines 9-14).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the cylindrical mirror of Wang, to reflect the light from the light elements into the light guide (Wang, Col. 3, lines 11-14).

6. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin in view of Nauta et al. (US Publication # 2002/0030772).

As for claim 4, Irwin teaches all the limitations of claim 2.

Irwin does not teach a further waveguide.

In the same field of endeavor (i.e. backlights using light guides) Nauta et al. teaches:

*An illuminator system (Fig. 1, #8), in which light from the one or more rows of elements (Fig. 1, #12) is collimated into the edge of the waveguide (Fig. 1, #15) by a further waveguide (Fig. 1, #13), [0030].*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the further waveguide

of Nauta et al., to ensure all light leaving the waveguide contributes to the light output of the illumination system (Nauta et al., [0030]).

As for claim 15, Irwin teaches all the limitations of claim 13.

Irwin does not teach a further waveguide.

In the same field of endeavor (i.e. backlights using light guides) Nauta et al. teaches:

*wherein the light from the one or more rows of elements (Fig. 1, #12) is collimated into the edge of the waveguide (Fig. 1, #15) by a further waveguide (Fig. 1, #13), [0030].*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the further waveguide of Nauta et al., to ensure all light leaving the waveguide contributes to the light output of the illumination system (Nauta et al., [0030]).

7. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin in view of Higuchi et al. (US Patent # 5,887,964)

As for claim 6, Irwin teaches all the limitations of claim 1.

Irwin does not teach a sheet for guiding the emerging light towards the normal to the display waveguide.

In the same field of endeavor (i.e. backlights using light guides) Higuchi et al. teaches:

*An illuminator system (Fig. 4), further including a film (Fig.4, #4') for guiding light emerging from the face of the waveguide towards a normal to the face of the waveguide (Fig. 4, #1), (Col. 8, lines 31-36).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the light guiding sheet of Higuchi et al., to provide whiteness and softness without degrading brightness (Higuchi et al., Col. 4, lines 56-61).

As for claim 17, Irwin teaches all the limitations of claim 12.

Irwin does not teach a sheet for guiding the emerging light towards the normal to the display waveguide.

In the same field of endeavor (i.e. backlights using light guides) Higuchi et al. teaches:

*wherein the scanning further comprises guiding (Fig.4, #4') light emerging from the face of the waveguide towards a normal to the face of the waveguide (Fig. 4, #1), (Col. 8, lines 31-36).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the illuminator of Irwin with the light guiding sheet of Higuchi et al., to provide whiteness and softness without degrading brightness (Higuchi et al., Col. 4, lines 56-61).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Ho (US Patent # 6,808,281) discloses an illuminator with a tapered waveguide and three light sources at different angles.

Parker et al. (US Patent # 5,921,652) discloses an illuminator with a waveguide and three light sources at different angles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. CARTER III whose telephone number is (571)270-3006. The examiner can normally be reached on 9AM - 5:30PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/  
Supervisory Patent Examiner, Art Unit 2629

/R.E.C/